FEM 1.209: 170219

FLOOD INSURANCE STUDY

COMPLETED 4

ORIGINAL

CITY OF WEST CHICAGO, ILLINOIS

DUPAGE COUNTY

REVISED:

APRIL 15, 1986

Federal Emergency Management Agency

COMMUNITY NUMBER - 170219

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NOTICE TO
FLOOD INSURANCE STUDY USERS

Individual components of this Flood Insurance Study (i.e., text, tables, profiles, and maps) are all subject to revision as additional data become available. Because revised components may be issued separately, study users should consult the community map repository for those components that are currently effective.

In cases where this Flood Insurance Study and any components thereof warrant revision, a Revisions Description section may be incorporated into this text. When applicable, study users should refer to the Revisions Description to obtain pertinent data and information concerning revisions.

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PUBLISHED SEPARATELY:

Flood Insurance Rate Map

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FLOOD INSURANCE STUDY
CITY OF WEST CHICAGO, ILLINOIS

1.0 INTRODUCTION

1.1 Purpose of Study

The purpose of this Flood Insurance Study is to investigate the existence and severity of flood hazards in the City of West Chicago, DuPage County, Illinois and to aid in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. Initial use of this information will be to convert the City of West Chicago to the regular program of flood insurance by the Federal Insurance Administration (FIA). Further use of the information will be made by local and regional planners in their efforts to promote sound land use and flood plain development.

1.2 Coordination

Community base map selection and the identification of streams requiring detailed study were done in a meeting attended by personnel of the Chicago District, U. S. Army Corps of Engineers (COE), representatives of the FIA and the State of Illinois, Department of Transportation, Division of Water Resources, and officials of the City of West Chicago on January 21, 1976. Hydrologic analyses and flood profiles for the West Branch DuPage River and Kress Creek were coordinated with those currently being prepared by the Chicago District, COE for the Flood Insurance Study of the unincorporated areas of DuPage County, Illinois.

The U. S. Soil Conservation Service (SCS) and the U. S. Geological Survey (USGS) were contacted in an effort to obtain previously developed hydrologic and hydraulic information. The SCS had no data relevant to the study area. The USGS provided historic flood profile data for the West Branch DuPage River and Kress Creek and crest-stage data for the West Branch DuPage River near West Chicago.

During the course of this study, flood elevations, flood boundaries, and floodway lines were reviewed with community officials and with the State Division of Water Resources. All hydrologic analyses were submitted for review, approval, and coordination to the Illinois State Water Survey, the repository for all such information developed for streams in Illinois.

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On September 15, 1977, the results of this study were reviewed at a final Consultation and Coordination Officer's meeting attended by representatives of the Chicago District COE, the FIA, the Illinois Division of Water Resources, and officials and residents of the City of West Chicago.

1.3 Authority and Acknowledgements

The source of authority for this Flood Insurance Study is the National Flood Insurance Act of 1968, as amended.

The hydrologic and hydraulic analyses for this study were prepared by the Chicago District, U. S. Army Corps of Engineers for the Federal Insurance Administration, under Inter-Agency Agreement No. IAA-H-7-76, Project Order No. 19, and Amendment No. 2 to this same agreement. This work, which was completed in April 1977, covered all significant flooding sources affecting the City of West Chicago.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the incorporated area of the City of West Chicago, Illinois. The area of study is shown on the Vicinity Map (Figure 1). An area in the north-central portion of West Chicago was not included in the study as it is part of unincorporated DuPage County.

Floods caused by overflow of the West Branch DuPage River, Kress Creek, and an unnamed leftbank tributary of Kress Creek were studied in detail due to the high degree of development either existing or likely in their flood plains. Also, 17 areas were studied by approximate methods. These are: two ponding areas between Geneva Road and the Chicago and Northwestern Railroad east of Kress Road; a system of drainage ditches at the headwater area of Kress Creek upstream (northeast) of the Chicago and Northwestern Railroad; an area north and south of Hawthorne Lane and west of Powis Road; a system of drainage ditches flowing to Kress Creek south of Hawthorne Lane in the Industrial Drive area; a small unnamed stream flowing southwesterly into a ponding area near Glen Oak Cemetery; two small ponding areas just north of State Route 64, one east of State Route 59, the other west of State Route 59; two small ponding areas just north of a Chicago and Northwestern Railroad spur and west of State Route 59; a small ponding area southwest of the intersection of State Route 59 and a Chicago and Northwestern Railroad spur; a ponding area

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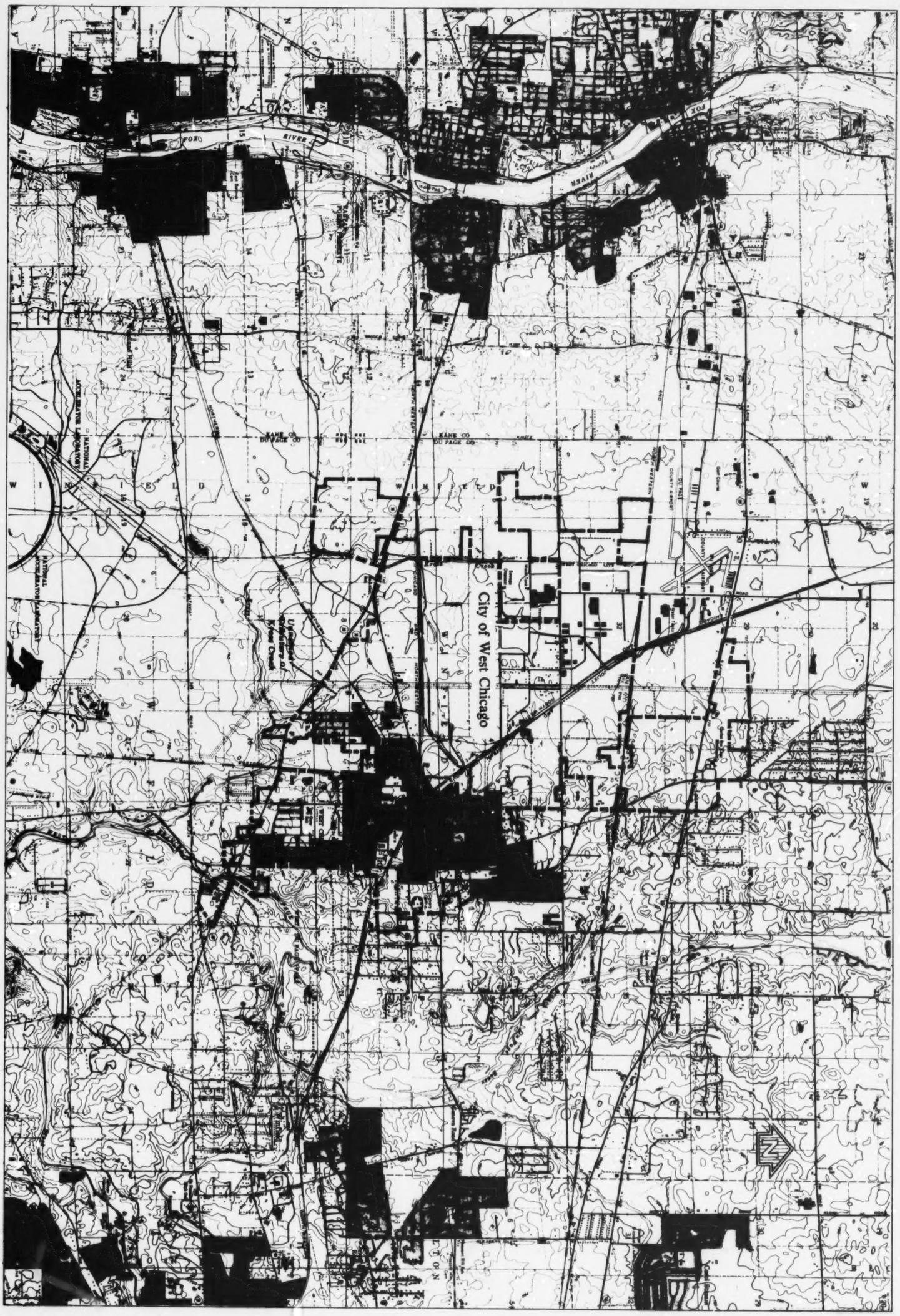

FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF WEST CHICAGO, IL

(DuPAGE CO.)

APPROXIMATE SCALE

4000 0 4000 8000 12000 FEET

VICINITY MAP

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near the eastern corporate limits of West Chicago just south of Washington Street; a ponding area just north of the Chicago and Northwestern Railroad, southwest of the intersection of Main Street and Neltor Boulevard; a ponding area north and south of Forrest Avenue between Elizabeth Street and Joliet Street; two small ponding areas just south of Forrest Avenue - one on Gates Street, the other on Oak Street; a small ponding area just east of Elizabeth Street between Forrest Avenue and Brown Street; a ponding area just east of Joliet Street between Roosevelt Road and Augusta Avenue; and three ponding areas north of the Chicago and Northwestern Railroad in the area between Kress Creek and Unnamed Tributary of Kress Creek.

The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development and proposed construction for the next five years, through April 1982.

Approximate methods of analysis were used to study those areas having low development potential and/or minimal flood hazards as identified at the initiation of the study. The scope and methods of study were proposed to and agreed upon by the FIA.

2.2 Community Description

The City of West Chicago is located in west-central DuPage County in northeastern Illinois about 30 miles west of Lake Michigan. The townships of Wayne, Geneva, and Winfield lie to the north, west, and south, respectively, of the City of West Chicago. The City of Wheaton lies approximately 5 miles to the east of West Chicago. West Chicago, in earlier days known as Turner Junction, was incorporated as a city in 1906. Economically the city is strongly influenced by the commuter needs of nearby Chicago and by the National Accelerator Laboratory (Fermilab) operated for the Energy Research and Development Administration, which is located just south of the city. As in much of DuPage County, population has greatly increased in the past two decades with a 47 percent jump from a 1960 population of 6,854 to 10,111 in 1970 (Reference 1); the estimated population in 1975 was 12,689.

The DuPage River watershed is located in the northern climatological division of Illinois, which is in the mild temperate zone of the mid-latitudes. During the summer the climate in the area is controlled principally by the prevailing westerly winds which bring in warm, moist, gulf maritime air masses from the south and southwest. In the winter the climate is directly affected by the cold, dry,

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Canadian air masses and the polar continental air masses from the north and northwest. The buffer action of Lake Michigan, with its storage of relatively warm waters, usually effects the path of cyclonic storms and air masses through the area. The average annual temperature over the watershed is about 49 degrees Fahrenheit (°F); the average monthly extremes being 22°F in January and 73°F in July. Lake Michigan often serves to break up hot spells in the summer and, when not extensively frozen, cold spells in the winter. The first killing frost usually occurs in mid-October and the last in early May. The average annual precipitation is 34.2 inches with approximately 10 percent due to snowfall. The summer rainfall is normally the heaviest of any portion of the year, yet there is no definite period that can be called a wet season. Periods of unusually large amounts of precipitation are recorded on several consecutive days in all months of the year (References 2 and 3).

The DuPage basin is largely undulating prairie land with numerous marshy areas in the northern portion. Hard, dense limestone and some sandstone comprise the bedrock of the area. The bedrock, however, has no direct relation to surface expression. During the ice age, extensions of ice covered the area and upon retreating left morainic deposits in the area. The variation of the deposition causes the general topography to vary from undulating to flat with the undulating being the more prominent. There are, however, a few rock outcrops in the basin. Post-glacial erosion has been slight and has been restricted to the valleys of the larger streams (Reference 2).

The West Branch DuPage River flows southwesterly for only slightly over 2,000 feet through the extreme southeast corner of West Chicago. This small segment of the city near the river is well developed with industrial, commercial, residential, and municipal improvements.

Kress Creek originates in the northwest area of the city in an area of industrial development and flows southerly along the west side of West Chicago, leaving the corporate area just upstream of the Burlington Northern Railroad. There is only moderate industrial and residential development along Kress Creek.

An unnamed left bank tributary of Kress Creek originates in the east-central part of West Chicago and flows for about 1 mile in a southwesterly direction through railyards and one small residential area (at Geneva Road). It then flows southeasterly for almost another mile to join Kress Creek just downstream of State Highway 38. Except at the State Highway 38 area, where there are commercial and residential improvement, this downstream reach is bordered by much open land.

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2.3 Principal Flood Problems

Discussions with city representatives revealed that the major flood problems at West Chicago have been along Kress Creek. The larger reported floods in the West Branch DuPage River basin were in March 1948, April 1950, October 1954, July 1957 and August 1972. The greatest flood in the West Chicago area occurred in October 1954. Flood delineations for this event at West Chicago, taken from the Hydrologic Investigations Atlases (Reference 4), indicate that areas adjacent to Kress Creek were flooded up to widths of 1,000 feet, while the unnamed Kress Creek tributary was little affected. During the 1954 flood along the West Branch, the portion of West Chicago upstream of State Highway 38 was flooded up to 250 feet from the channel on the right (west) bank, while downstream of the highway the left (east) bank was flooded for a distance of up to 350 feet from the channel. The peak discharge for the 1954 flood on the West Branch DuPage River at West Chicago had a recurrence probability of about 50 years. Specific damage estimates at West Chicago during the 1954 or 1972 floods were not found in the newspaper accounts of the flooding. No photographs of past flooding at West Chicago could be found.

2.4 Flood Protection Measures

Flood protection works planned by local and state agencies, and the Metropolitan Sanitary District are under construction on the West Branch DuPage River at Hanover Park, about 14 miles upstream from West Chicago. These works, consisting of channel improvements and detention ponds, will have no significant effect on flood peak discharges at West Chicago. The COE was authorized by Section 206 of the Federal Public Act 85-500 to investigate the feasibility of providing solutions to urban water damage problems caused by overbank flooding and poor drainage in northeastern Illinois and northwestern Indiana. The investigation of drainage problems will be limited to severe backup caused by surcharging of drainage outlets by high river stages. The DuPage River basin is included within the 2,600 square mile bi-state study area. The Chicago District of the COE initiated a study of the DuPage River basin under this authority in the summer of 1976. At present, there are no significant flood-control structures built or planned on the study streams at West Chicago.

The City of West Chicago has mapped the flood hazard areas and, by powers vested in the city building inspector by various city building ordinances, regulates construction there by requiring that first floor levels be elevated to a point 3 feet above the flood of record.

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3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Floods having recurrence intervals of 10, 50, 100, and 500 years have been selected as having special significance for flood plain management and for flood insurance premium rates. The analyses reported here reflect current conditions in the watersheds of the flooding sources.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for floods of the selected recurrence intervals for each flooding source studied in detail in the community.

Frequency-discharge data for the West Branch DuPage River were developed through the use of the "Chicago Metropolitan Study, DuPage River Basin" (Reference 5), performed by the COE's Hydrologic Engineering Center. In the Chicago Metro Study, the DuPage River basin above Shorewood, Illinois, was divided into 20 sub-areas and a generalized HEC-1 rainfall-runoff computer model was calibrated for the basin (Reference 6). Using 24-hour rainfall data obtained from Weather Bureau Technical Paper No. 40 (Reference 7), 1-hour values, in critical order, were entered into the HEC-1 model of the DuPage River basin to determine the 10-, 50-, and 100-year peak discharges. Discharges for the 500-year flood were determined by linear extrapolation of a log-probability graph of flood discharges computed for frequencies up to 100 years.

Kress Creek is within sub-area 6 of the Chicago Metro Study. Peak flows for this sub-area, previously derived by the Chicago District, were utilized to derive peak flood flows on Kress Creek and the unnamed tributary to Kress Creek. A discharge-frequency relationship was developed for Kress Creek at State Highway 38, and peak flows for Kress Creek at the mouth were obtained by applying the square root of the drainage area ratio. The frequency-discharge drainage area relationships for the streams studied in detail in the community are presented in Table 1, "Summary of Discharges."

The peak discharge for a portion of the headwater area of Kress Creek studied by approximate methods was determined from a regional curve which indicated the 100-year peak discharge as a function of average streambed slope. This curve was determined by solving and plotting solutions to the multiple regression equation adopted by the State of Illinois for several streams within DuPage County (Reference 8).

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TABLE 1 - SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
WEST BRANCH DuPAGE RIVER					
Roosevelt Road (State Highway 38)	58.5	1,700	2,400	2,700	3,550
Above Mouth, Kress Ck.	62.0	1,800	2,600	2,900	3,900
KRESS CREEK					
Hawthorne Lane	4.2	330	460	505	635
Indian Boundary Road	5.4	365	510	560	705
Roosevelt Road (State Highway 38)	10.1	510	710	780	985
River mile 3.1	12.3	580	810	890	1,125
Town Road	14.8	655	915	1,000	1,270
Mouth at West Branch DuPage River	18.3	760	1,060	1,170	1,470
UNNAMED TRIBUTARY OF KRESS CREEK					
Mouth at Kress Creek	1.0	95	135	155	195

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of the flooding sources studied in detail in the community were carried out to provide estimates of the elevations of floods of the selected recurrence intervals along each of these flooding sources.

Cross-section data for part of Kress Creek and for the entire Unnamed Tributary of Kress Creek were obtained by field measurement. Cross sections for Kress Creek up to Hawthorne Lane and for the West Branch DuPage River are identical to those used for a previous COE Flood Plain Information Report (Reference 9). In addition, channel modifications to Kress Creek for a distance of 600 feet upstream of the Elgin, Joliet, and Eastern Railroad, and culverts at the railroad crossing were inspected in March 1978 and incorporated into the hydraulic model. Channel portions of the West Branch cross sections were field surveyed, while overbank portions were determined from aerial photographs (Reference 10). In all cases, all bridges and culverts were surveyed to obtain elevation data and structural geometry. The State of Illinois, Division of Highways plans rehabilitation of the State Highway 38 bridge over the West Branch DuPage River at West Chicago in Fiscal Year 1979, but no design plans were available at the time of the study.

Roughness coefficients (Manning's "n") for these computations were estimated by field inspection at the various cross-section locations.

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Roughness values, which varied for each stream studied in detail, are as shown in the following table.

TABLE 2 - ROUGHNESS COEFFICIENTS

FLOODING SOURCE	ROUGHNESS COEFFICIENTS CHANNEL	OVERBANK
West Branch DuPage River	0.040	0.070-0.096
Kress Creek	0.015-0.080	0.040-0.100
Unnamed Tributary of Kress Creek	0.015-0.065	0.035-0.070

Water-surface profiles were developed through use of the COE HEC-2 step-backwater computer program (Reference 11). Flood profiles were drawn showing computed water-surface elevations to an accuracy of 0.5 foot for floods of the selected recurrence intervals.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway is computed (Section 4.2), selected cross-section locations are also shown on the Flood Boundary and Floodway Map (Exhibit 2).

Starting elevations were developed by the slope-area method for Kress Creek and the Unnamed Tributary of Kress Creek; starting elevations for the West Branch DuPage River were derived from the previously-mentioned Flood Plain Information Report (Reference 9). Stream mileages for the West Branch DuPage River and Kress Creek were obtained from the Hydrologic Investigations Atlases (Reference 4).

All elevations used in this study are referenced to the National Geodetic Vertical Datum of 1929 (NGVD), formerly referred to as Sea Level Datum of 1929. Locations of the elevation reference marks used in this study are shown on the maps.

The hydraulic analyses for this study are based only on the effects of unobstructed flow. The flood elevations as shown on the profiles are thus considered valid only if hydraulic structures in general remain unobstructed.

The 100-year flood stage for the stream portion in the Kress Creek headwaters studied by approximate methods was determined by solving Manning's equation for depth of flow in the channel. This stream was inspected in the field to obtain typical cross sections.

4.0 FLOOD PLAIN MANAGEMENT APPLICATIONS

A prime purpose of the National Flood Insurance Program is to encourage state and local governments to adopt sound flood plain management programs.

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Each Flood Insurance Study, therefore, includes a flood boundary map designed to assist communities in developing sound flood plain management measures.

4.1 Flood Boundaries

In order to provide a national standard without regional discrimination, the 100-year flood has been adopted by the FIA as the base flood for purposes of flood plain management measures. The 500-year flood is employed to indicate additional areas of flood risk in the community. For each stream studied in detail, the boundaries of the 100- and 500-year floods have been delineated using the flood elevations determined at each cross section; between cross sections, the boundaries were interpolated using photogrammetric maps at a scale of 1"=400' (Reference 10). In cases where the 100- and 500-year flood boundaries are close together, only the 100-year boundary has been shown.

Two areas of stormwater ponding, one just south of Hawthorne Lane and west of Glen Oak Cemetary and another just south of the Chicago and Northwestern Railroad and north of the Roosevelt Road - Geneva Road intersection, were delineated by approximate methods using a combination of the use of the West Chicago Hydrologic Atlas (Reference 4), field investigations, and aerial photo interpretation. The drainage ditches in the headwater area of Kress Creek, upstream of the Chicago and Northwestern Railroad, were measured in the field and a rough flow determination using the rational method was made for the 100-year event. Flood boundaries were then delineated based on the depth of flow. The flooded areas south of Hawthorne Lane in the Industrial Drive area were determined through field investigation and photo interpretation to be frequently flooded wetlands. The area just north and south of Hawthorne Lane and west of Powis Road was designated as an area of shallow (sheet flow) flooding with depths less than 1.0 foot. This area was plotted on very detailed topographic maps using a water-surface elevation generally set about 1.0 foot above the prevailing ground level. Flood boundaries for all other approximate study areas were taken from the FIA's Flood Hazard Boundary Map for the City of West Chicago (Reference 12).

The boundaries of the 100- and 500-year floods are shown on the Flood Boundary and Floodway Map (Exhibit 2). Small areas within the flood boundaries may lie above the flood elevations and, therefore, may not be subject to flooding. Owing to limitations of the map scale or lack of detailed topographic information, such areas are not shown.

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4.2 Floodways

Encroachment on flood plains, such as artificial fill, reduces the flood-carrying capacity, increases the flood heights of streams and increases flood hazards in areas beyond the encroachment itself. One aspect of flood plain management involves balancing the economic gain from flood plain development against the resulting increase in flood hazards. For purposes of the Flood Insurance Program, the concept of a floodway is used as a tool to assist local communities in this aspect of flood plain management. Under this concept, the area of the 100-year flood is divided into a floodway and a floodway fringe. The floodway is the channel of a stream plus any adjacent flood plain areas that must be kept free of encroachment in order that the 100-year flood may be carried without substantial increases in flood heights. Minimum standards of the FIA limit such increases in flood heights to 1.0 foot, provided that hazardous velocities are not produced, in the absence of more stringent state or local criteria. In Illinois, however, under Section 65f, Chapter 19, Illinois Revised Statutes (Reference 13), encroachment in the flood plain is limited to that which will cause only an insignificant increase in flood heights. Thus, at the recommendation of the Division of Water Resources, a floodway having no more than 0.1 foot surcharge has been delineated for this study, provided that hazardous velocities are not produced. The floodways in this report are presented to local agencies as minimum standards that can be adopted or that can be used as a basis for additional studies.

The floodways presented in this study were computed on the basis of equal conveyance reduction from each side of the flood plain. The results of these computations are tabulated at selected cross sections for each stream segment for which a floodway is computed (Table 3). Portions of the floodway on the West Branch DuPage River, Kress Creek, and Unnamed Tributary of Kress Creek are outside the corporate limits.

As shown on the Flood Boundary and Floodway Map (Exhibit 3), the floodway widths were determined at cross sections; between cross sections, the boundaries were interpolated. In cases where the boundaries of the floodway and the 100-year flood are either close together or coincident, only the floodway boundary has been shown.

The area between the floodway and the boundary of the 100-year flood is termed the floodway fringe. The floodway fringe thus encompasses the portion of the flood plain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood more than 0.1 foot at any point. Typical relationships between the

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FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH[2] (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	WITH FLOODWAY (NGVD)	WITHOUT FLOODWAY (NGVD)	DIFFERENCE (FT.)
West Branch DuPage River							
A	42.711	195/195	1,112	2.3	707.3	707.2	0.1
B	42.740	198/80	1,157	2.3	707.6	707.5	0.1
Kress Creek							
A	1.718	335/40	1,266	0.9	723.9	723.8	0.1
B	1.893	246/50	743	1.3	724.1	724.0	0.1
C	3.980	123/60	421	2.1	740.7	740.6	0.1
D	4.246	247/0	808	1.0	744.6	744.6	0.0
E	4.301	300/300	1,213	0.6	745.1	745.1	0.0
F	4.589	178/178	721	1.1	745.3	745.2	0.1
G	4.645	513/220	977	0.8	745.6	745.5	0.1
H	4.854	600/320	2,167	0.4	746.6	746.6	0.0
I	5.166	428/180	1,604	0.5	747.8	747.8	0.0
J	5.296	298/50	978	0.6	749.7	749.7	0.0
K	5.617	289/75	701	0.8	750.6	750.6	0.0
L	5.934	133/133	371	1.5	752.8	752.7	0.1
M	6.242	200/110	490	1.0	752.9	752.8	0.1
N	6.257	200/200	505	1.0	752.9	752.8	0.1

[1]MILES ABOVE MOUTH
[2]WIDTH/WIDTH WITHIN CORPORATE LIMITS

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF WEST CHICAGO, IL

(DuPAGE CO.)

FLOODWAY DATA

WEST BRANCH DuPAGE RIVER AND KRESS CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	WITH FLOODWAY (NGVD)	WITHOUT FLOODWAY (NGVD)	DIFFERENCE (FT.)
Kress Creek (continued)							
O	6.347	348	857	0.6	753.0	752.9	0.1
P	6.459	550	1,502	0.3	753.0	752.9	0.1
Q	6.757	200	442	1.1	753.6	753.6	0.0
Unnamed Tributary of Kress Creek							
A	0.222	155	693	0.2	732.6	732.6	0.0
B	0.341	28	56	2.8	732.5	732.5	0.0
C	0.383	200	321	0.5	734.7	734.7	0.0
D	0.447	162/50[2]	334	0.5	736.7	736.7	0.0
E	0.648	30	37	4.1	741.7	741.7	0.0
F	0.689	77	166	0.9	744.3	744.3	0.0
G	0.848	24	47	2.6	744.7	744.6	0.1
H	0.909	99	221	0.8	749.0	749.0	0.0
I	1.022	67	99	1.3	749.1	749.1	0.0
J	1.094	31	80	1.6	749.2	749.2	0.0

[1] MILES ABOVE MOUTH
[2] WIDTH/WIDTH WITHIN CORPORATE LIMITS

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF WEST CHICAGO, IL
(DuPAGE CO.)

FLOODWAY DATA

KRESS CREEK AND UNNAMED TRIBUTARY OF KRESS CREEK

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FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	WITH FLOODWAY (NGVD)	WITHOUT FLOODWAY (NGVD)	DIFFERENCE (FT.)
Unnamed Tributary of Kress Creek (continued)							
K	1.181	78	189	0.7	749.2	749.2	0.0
L	1.309	5	15	7.9	750.2	750.1	0.1
M	1.381	30	85	1.4	751.9	751.9	0.0
N	1.441	125	183	0.7	752.7	752.7	0.0
O	1.568	45	93	0.9	752.9	752.9	0.0
P	1.670	300	985	0.1	757.0	757.0	0.0
Q	1.962	163	579	0.1	757.0	757.0	0.0
R	2.118	35	121	0.7	758.6	758.6	0.0

[1]MILES ABOVE MOUTH

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TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

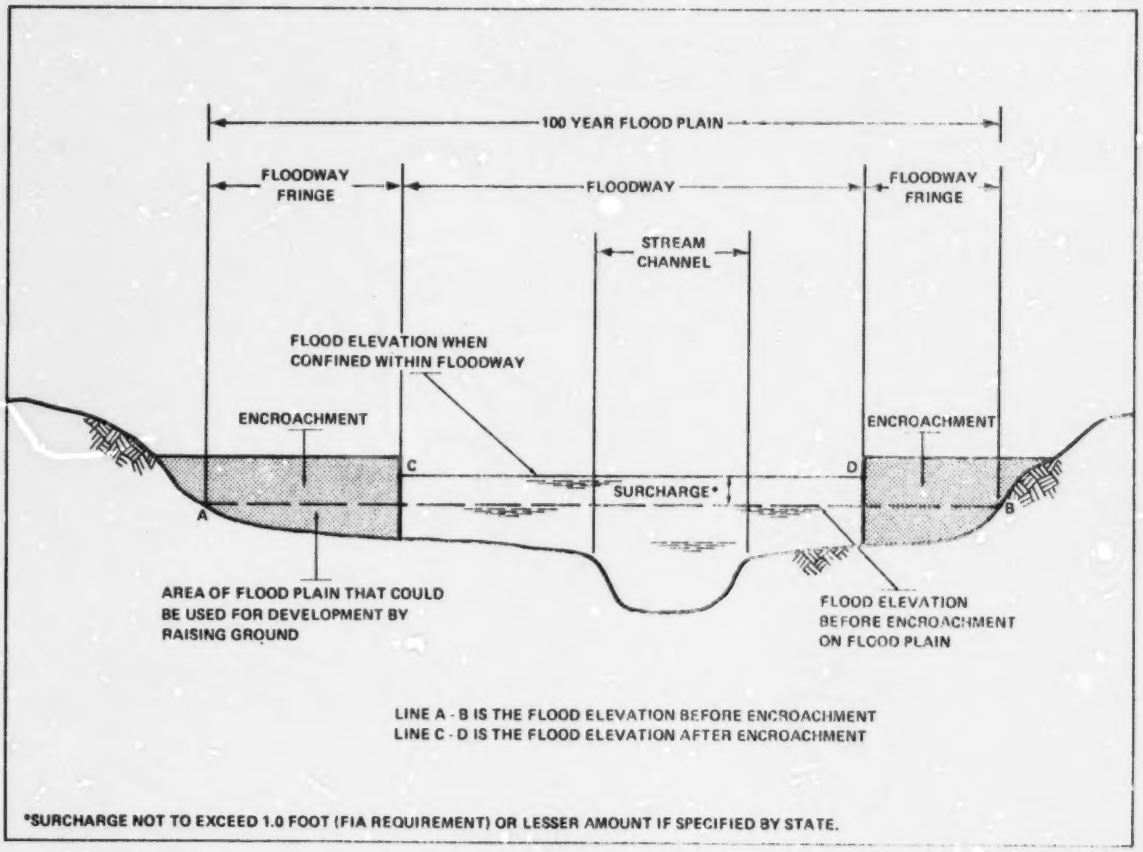
CITY OF WEST CHICAGO, IL

(DuPAGE CO.)

FLOODWAY DATA

UNNAMED TRIBUTARY OF KRESS CREEK

floodway and the floodway fringe and their significance to flood plain development are shown in Figure 2.


100 YEAR FLOOD PLAIN
FLOODWAY FRINGE
FLOODWAY
FLOODWAY FRINGE
STREAM CHANNEL
FLOOD ELEVATION WHEN CONFINED WITHIN FLOODWAY
ENCROACHMENT
ENCROACHMENT
C
D
SURCHARGE*
A
B
AREA OF FLOOD PLAIN THAT COULD BE USED FOR DEVELOPMENT BY RAISING GROUND
FLOOD ELEVATION BEFORE ENCROACHMENT ON FLOOD PLAIN
LINE A - B IS THE FLOOD ELEVATION BEFORE ENCROACHMENT
LINE C - D IS THE FLOOD ELEVATION AFTER ENCROACHMENT
*SURCHARGE NOT TO EXCEED 1.0 FOOT (FIA REQUIREMENT) OR LESSER AMOUNT IF SPECIFIED BY STATE.

FLOODWAY SCHEMATIC Figure 2

The floodways along Kress Creek and Unnamed Tributary of Kress Creek were computed without consideration for backwater flooding near the mouth of those streams. Floodway surcharge elevations along their lower portions, therefore, are below rather than above the 100-year flood elevations as shown on the profiles (Exhibit 1).

5.0 INSURANCE APPLICATION

In order to establish actuarial insurance rates, the FIA has developed a process to transform the data from the engineering study into flood insurance criteria. This process includes the determination of reaches, Flood Hazard Factors (FHFs), and flood insurance zone designations for each flooding source affecting the City of West Chicago.

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5.1 Reach Determinations

Reaches are defined as lengths of watercourses having relatively the same flood hazard, based on the average weighted difference in water-surface elevations between the 10- and 100-year floods. This difference does not have a variation greater than that indicated in the following table for more than 20 percent of the reach.

Average Difference Between 10- and 100-Year Floods	Variation
Less than 2 feet	0.5 foot
2 to 7 feet	1.0 foot

Ten reaches meeting the above criteria were required for the flooding sources of West Chicago. These included one on the West Branch DuPage River, four on Kress Creek, and five on Unnamed Tributary of Kress Creek. The locations of these reaches are shown on the Flood Profiles (Exhibit 1).

5.2 Flood Hazard Factors

The FHF is the FIA device used to correlate flood information with insurance rate tables. Correlations between property damage from floods and their FHFs are used to set actuarial insurance premium rate tables based on FHFs from 005 to 200.

The FHF for a reach is the average weighted difference between the 10- and 100-year flood water-surface elevations expressed to the nearest 0.5 foot, and shown as a three-digit code. For example, if the difference between water-surface elevations of the 10- and 100-year floods is 0.7 foot, the FHF is 005; if the difference is 1.4 feet, the FHF is 015; if the difference is 5.0 feet, the FHF is 050. When the difference between the 10- and 100-year water-surface elevations is greater than 10.0 feet, accuracy for the FHF is to the nearest foot.

5.3 Flood Insurance Zones

After the determination of reaches and their respective FHFs, the entire incorporated area of the City of West Chicago was divided into zones, each having a specific flood potential or hazard. Each zone was assigned one of the following flood insurance zone designations:

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Zones A1, A2, A3, A4, A5:	Special Flood Hazard Areas inundated by the 100-year flood, determined by detailed methods; base flood elevations shown, and zones subdivided according to FHF.
Zone B:	Areas between the Special Flood Hazard Area and the limits of the 500-year flood, including areas of the 500-year flood plain that are protected from the 100-year flood by dike, levee, or other water control structure; also areas subject to certain types of 100-year shallow flooding where depths are less than 1.0 foot; and areas subject to 100-year flooding from sources with drainage areas less than 1 square mile. Zone B is not subdivided.
Zone C:	Areas of Minimal Flooding; including areas that are protected from 100- and 500-year floods by dike, levee, or other water control structure; not subdivided.

Table 4, "Flood Insurance Zone Data," summarizes the flood elevation differencces, FHFs, flood insurance zones, and base flood elevations for each flooding source studied in detail in the community.

5.4 Flood Insurance Rate Map Description

The Flood Insurance Rate Map for the City of West Chicago is, for insurance purposes, the principal result of the Flood Insurance Study. This map (published separately) contains the official delineation of flood insurance zones and base flood elevation lines. Base flood elevation lines show the locations of the expected whole-foot water-surface elevations of the base (100-year) flood. This map is developed in accordance with the latest flood insurance map preparation guidelines published by the FIA.

6.0 OTHER STUDIES

The 100-year water-surface elevations computed in this study for the West Branch DuPage River and Kress Creek differ with those published previously in the COE Flood Plain Information Report (FPI) (Reference 9). These differences, which are on the magnitude of several feet, are caused primarily by minor HEC-2 program modifications adopted after completion of the FPI hydraulic computations, and by revisions to input data to

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FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1% (100-YEAR) AND			FHF	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
West Branch DuPage River							
Reach 1	05	-1.8	-0.5	+1.5	020	A4	Varies
Kress Creek							
Reach 1	05	-1.9	-0.5	+1.7	020	A4	Varies
Reach 2	05	-1.5	-0.4	+0.7	015	A3	Varies
Reach 3	05	-0.9	-0.2	+0.4	010	A2	Varies
Reach 4	05	-0.3	-0.1	+0.3	005	A1	Varies
Unnamed Tributary of Kress Creek							
Reach 1	05	-2.5	-0.9	+1.1	025	A5	Varies
Reach 2	05	-0.3	-0.1	+0.2	005	A1	Varies
Reach 3	05	-1.4	-0.8	+0.5	015	A3	Varies
Reach 4	05	-0.8	-0.4	+0.5	010	A2	Varies
Reach 5	05	-0.1	-0.0	+0.0	005	A1	Varies

[1]FLOOD INSURANCE RATE MAP PANEL
[2]WEIGHTED AVERAGE
[3]ROUNDED TO THE NEAREST FOOT–SEE MAP

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF WEST CHICAGO, IL

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FLOOD INSURANCE ZONE DATA

WEST BRANCH DuPAGE RIVER, KRESS CREEK, AND UNNAMED TRIBUTARY OF KRESS CREEK

more accurately model existing conditions. Stream mileages for some bridges and cross sections have also been slightly revised for increased accuracy in the present report.

Where differences exist between the FPI profiles and those computed for this study, flood limits have been slightly revised to reflect these changes. For purposes of the Flood Insurance Program, the information in the present study supersedes that in the FPI report.

This study has been coordinated for complete agreement with the Flood Insurance Study currently being prepared for DuPage County (Reference 14).

The Illinois Division of Water Resources has a study underway of the West Branch DuPage River to establish flood plain regulations. It is necessary to determine both the 100-year profile and the floodway along the West Branch DuPage River in conjunction with their study. The technical data in the study is based on the West Branch DuPage River FPI Report. During the course of the work on this Flood Insurance Study, the Division of Water Resources was contacted relative to the modifications to the FPI Report discussed above. They have agreed to adopt the revised technical data developed for this Flood Insurance Study for their Flood Plain Regulations Study. Therefore, the data presented in both reports will be identical and no conflicts should develop.

All hydrologic and hydraulic data for this study were coordinated with corresponding data developed for the Flood Insurance Study for unincorporated DuPage County. That study is currently being prepared by the Chicago District COE.

This study is authoritative for purposes of the Flood Insurance Program and the data presented here either supersede or are compatible with previous determinations.

7.0 LOCATION OF DATA

Survey, hydrologic, hydraulic, and other pertinent data used in this study can be obtained by contacting the office of the Federal Insurance Administration, Regional Director, Region V Office, 1 North Dearborn Street, Chicago, Illinois 60602.

8.0 BIBLIOGRAPHY AND REFERENCES

1. Harry Hansen, ed., Illinois, A Descriptive and Historical Guide, New York, Hastings House, 1974.

2. State of Illinois, Department of Public Works and Buildings, Division of Waterways, Survey Report for Flood Control, DuPage River, DuPage and Will Counties, 1962.

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13. State of Illinois, Guidelines for Flood Plain Studies, "Regulation of Construction Within Flood Plains Established Pursuant to Section 65f, Chapter 19," Illinois Revised Statutes, March 1975.

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*U.S. GOVERNMENT PRINTING OFFICE: 1979 620-090/578 1-3

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9.0 REVISIONS DESCRIPTION (Revised: April 15, 1986)

9.1 Purpose

The purpose of this Flood Insurance Study Revisions Description is to incorporate revised data into this currently effective Flood Insurance Study for the City of West Chicago, DuPage County, Illinois. This Revisions Description is intended to provide updated information that aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

9.2 Acknowledgments

The hydraulic analyses for this Revisions Description were performed by Webster, McGrath & Carlton, Ltd. The Federal Emergency Management Agency (FEMA) reviewed and accepted these data for purposes of this revision.

9.3 Scope

This Revisions Description involved a channel relocation on an Unnamed Tributary of Kress Creek. A revised hydraulic analysis was completed for an Unnamed Tributary of Kress Creek from Burlington Northern Railroad to Geneva Road to reflect the channel relocation.

9.4 Hydraulic Analyses

The HEC-2 hydraulic analysis (Reference 1) for an Unnamed Tributary of Kress Creek was revised to include new cross-section data obtained by field survey and slightly lower channel roughness coefficients, which ranged from 0.030 to 0.040. The 10-, 50-, and 500-year floods were calculated by approximate methods. The starting water-surface elevations and peak discharges remained the same as those determined for the original study.

The base flood elevations and regulatory floodway for an Unnamed Tributary of Kress Creek have been revised as described in this Revisions Description and are shown on the revised Floodway Data table, Flood Profiles, Flood Insurance Rate Map, and Flood Boundary and Floodway Map. This revised information supersedes those portions of the original Flood Insurance Study for the City of West Chicago, DuPage County, Illinois.

9.5 Floodways

Floodway computations for an Unnamed Tributary of Kress Creek were revised as a result of new hydraulic analysis. The floodways were computed on the basis of equal conveyance reduction from each side of the flood plain. The results of these computations were tabulated at selected cross sections for each stream segment for which a floodway was revised and are presented in Table 3, Floodway Data.

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9.6 Location of Data

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting the Natural and Technological Hazards Division, FEMA, 300 South Wacker Drive, Chicago, Illinois 60606.

9.7 References and Bibliography

1. U.S. Army Corps of Engineers, Hydrologic Engineering Center, HEC-2 Water-Surface Profiles Generalized Computer Program, Davis, California, updated March 1982.

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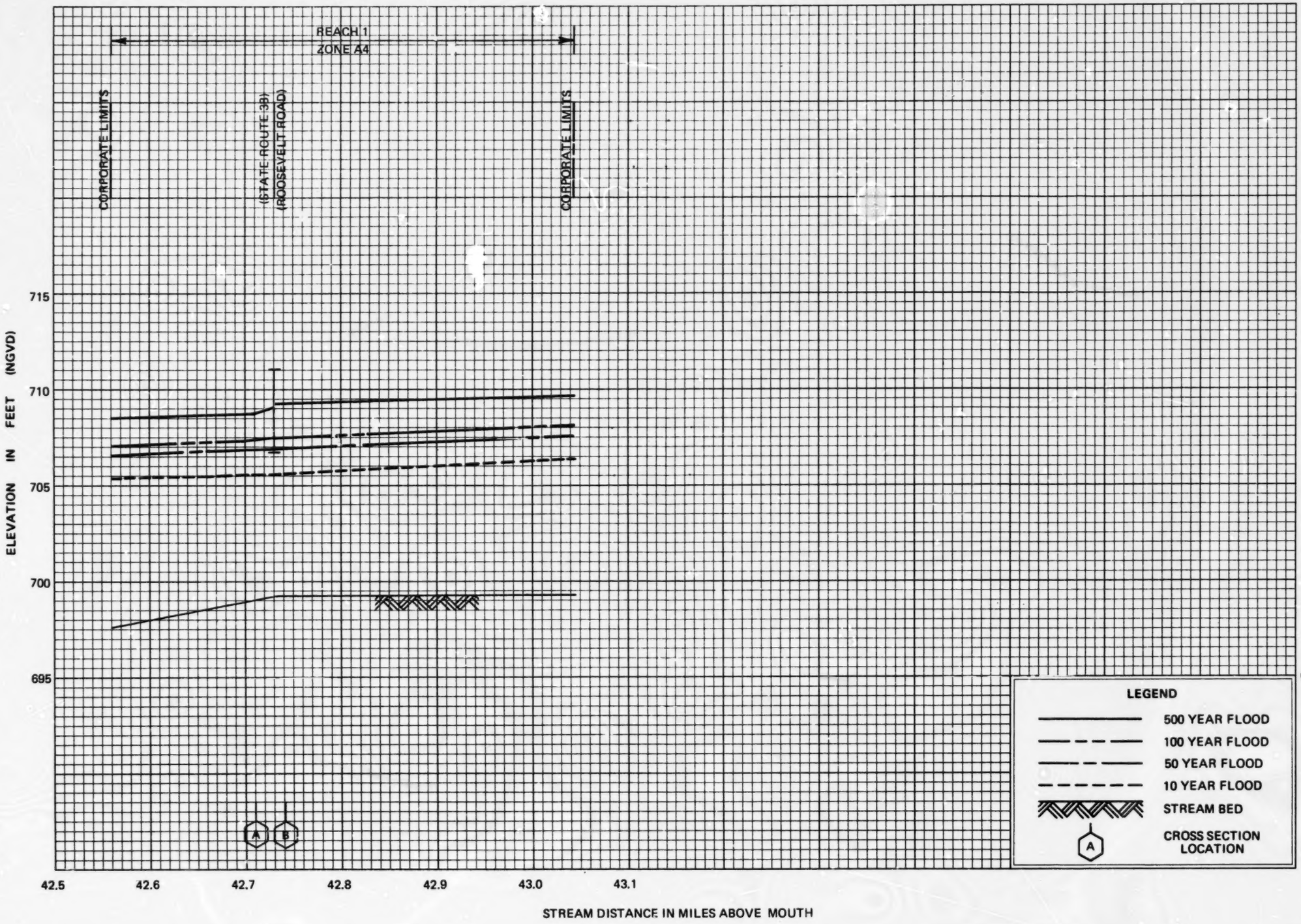

FLOOD PROFILES

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CITY OF WEST CHICAGO, IL

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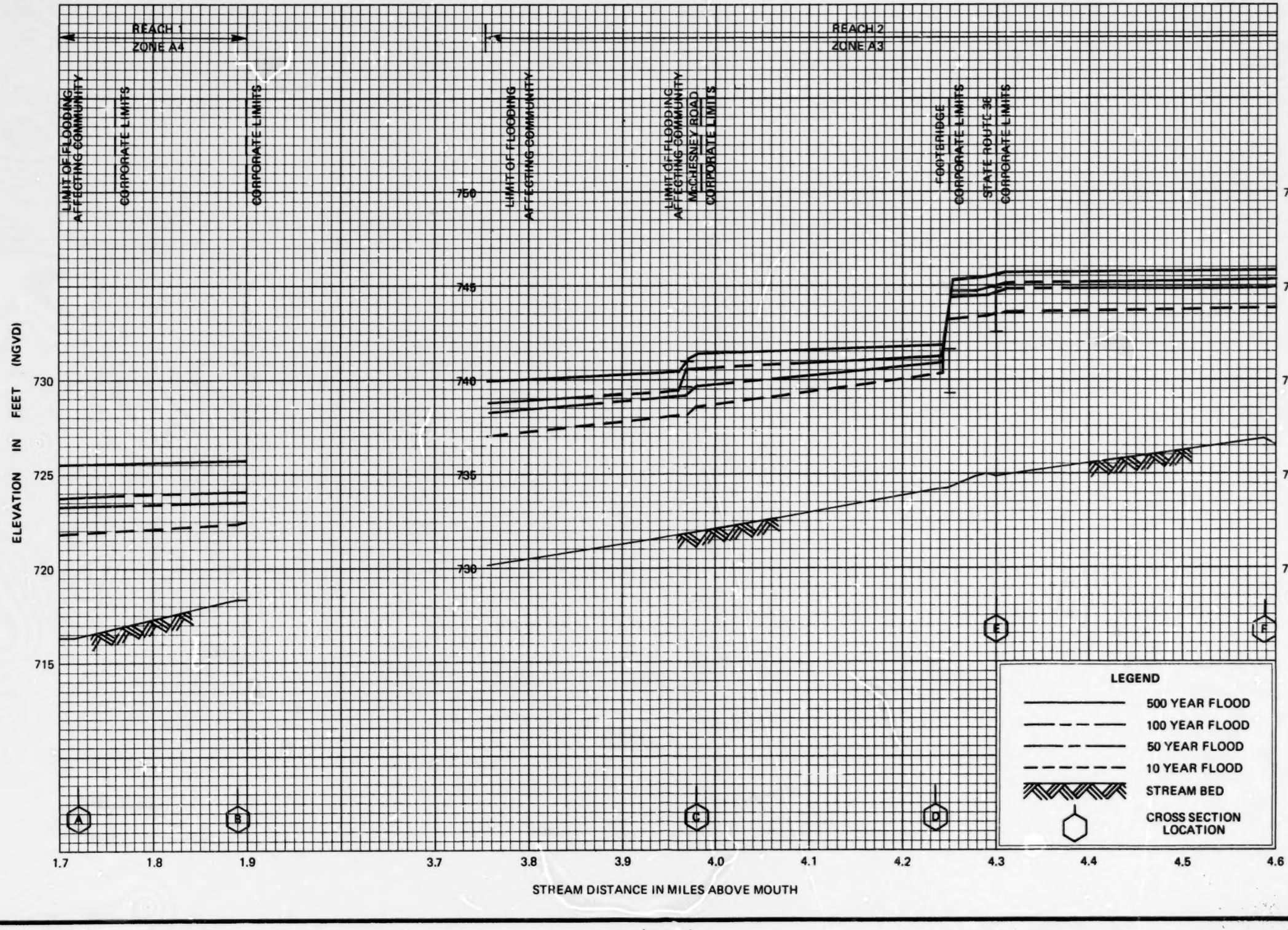

FLOOD PROFILES

KRESS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF WEST CHICAGO, IL

(DuPAGE CO.)

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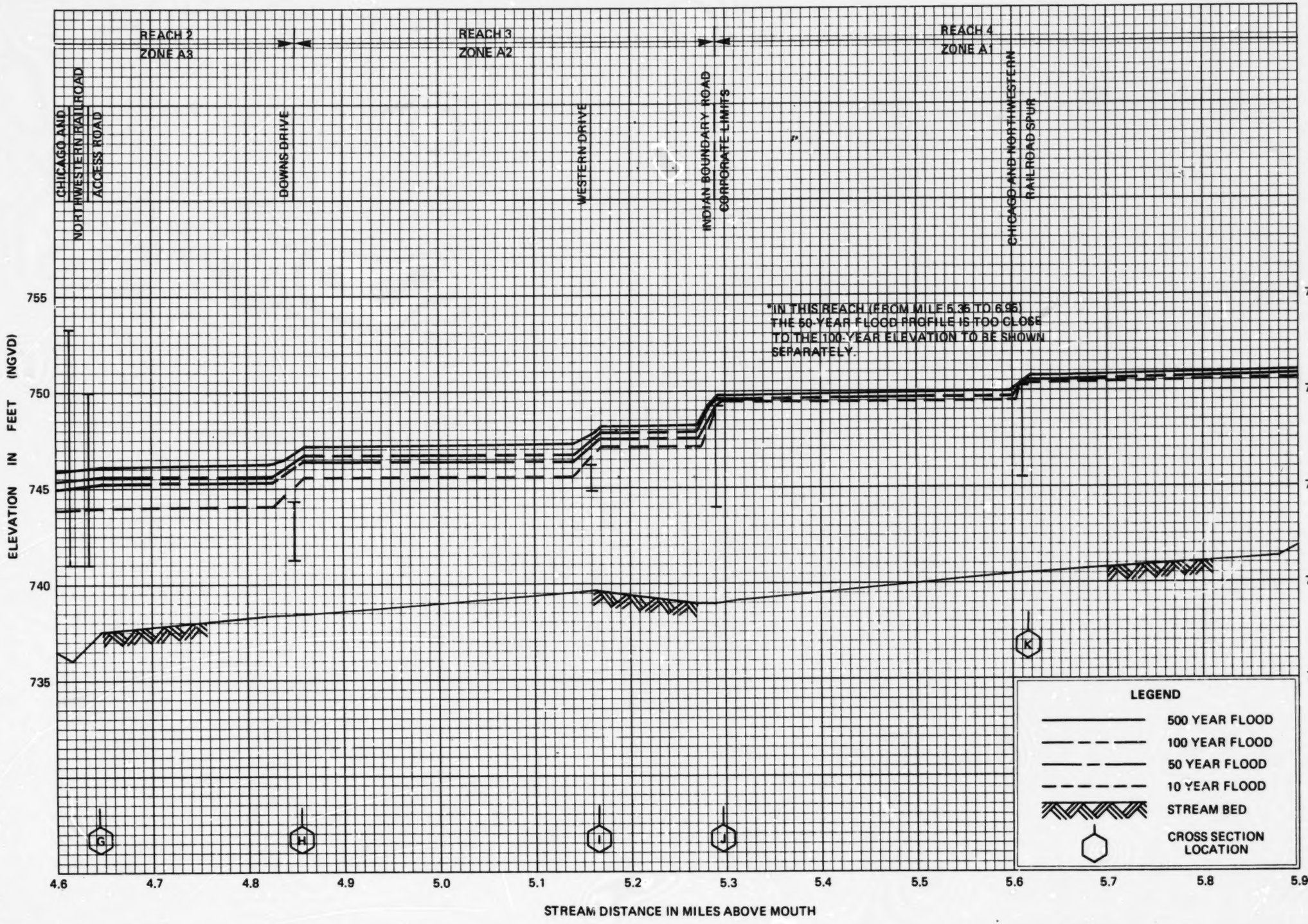

FLOOD PROFILES

KRESS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF WEST CHICAGO, IL
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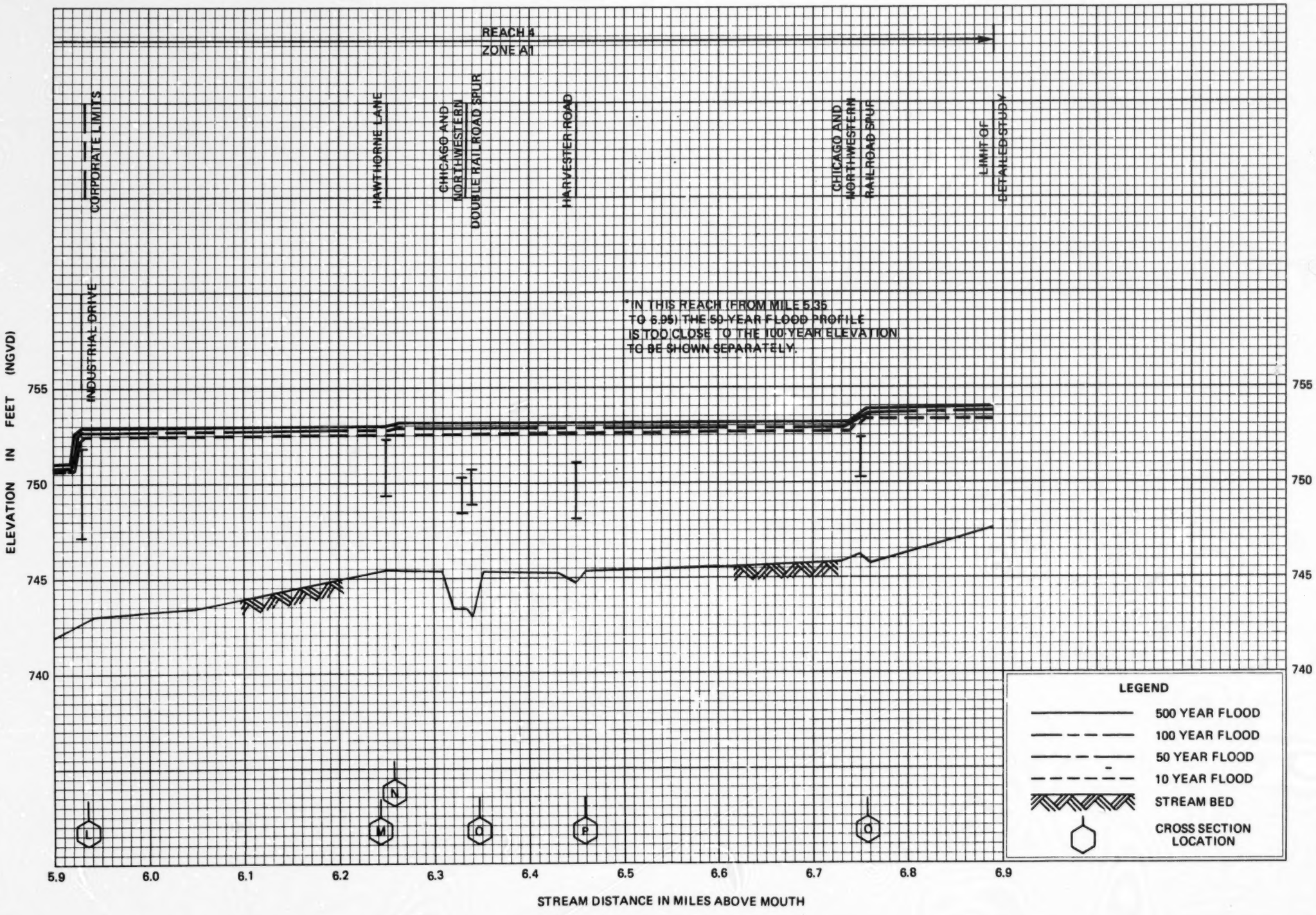

FLOOD PROFILES

KRESS CREEK

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CITY OF WEST CHICAGO, IL

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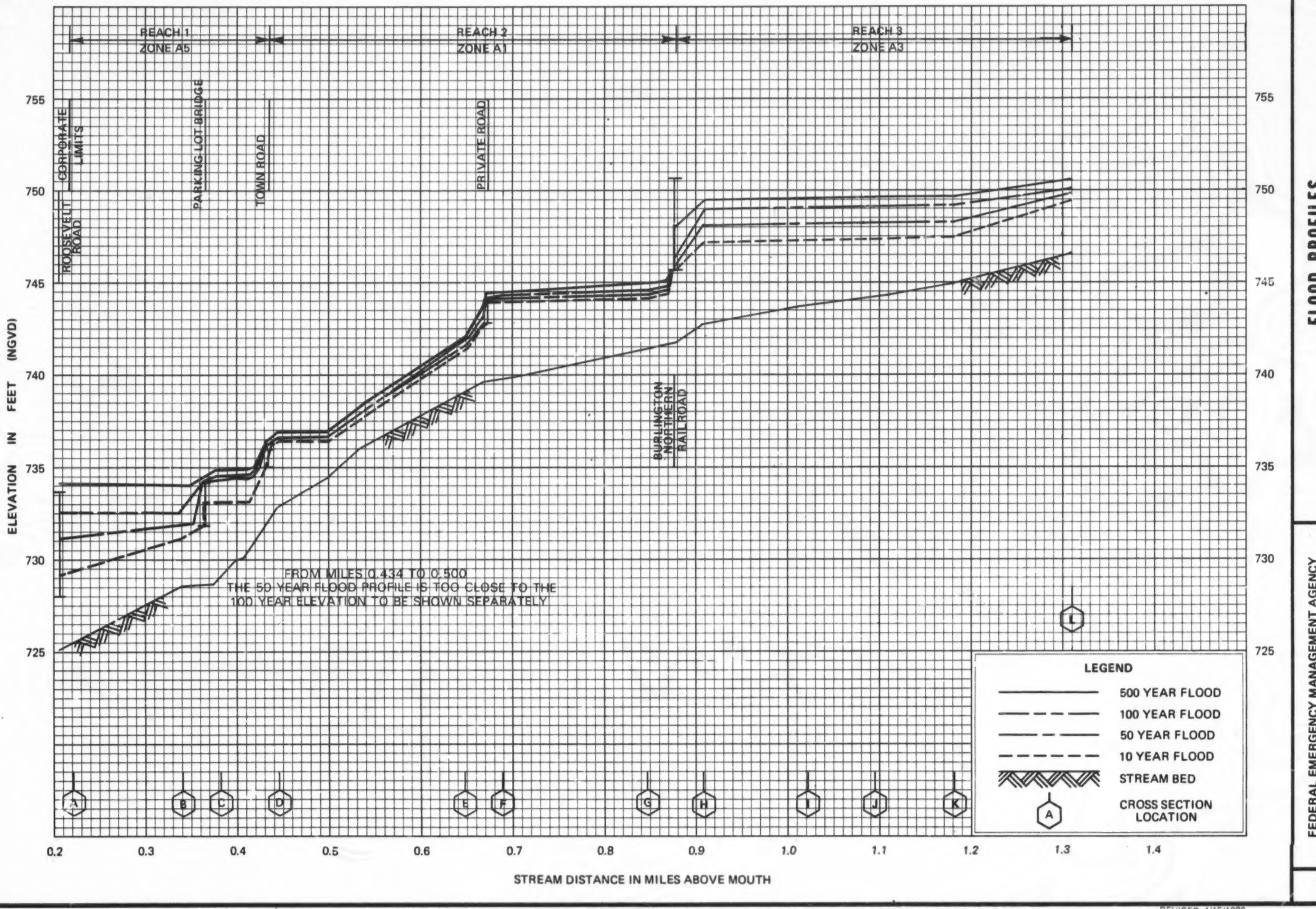

FLOOD PROFILES

UNAMED TRIBUTARY OF KRESS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

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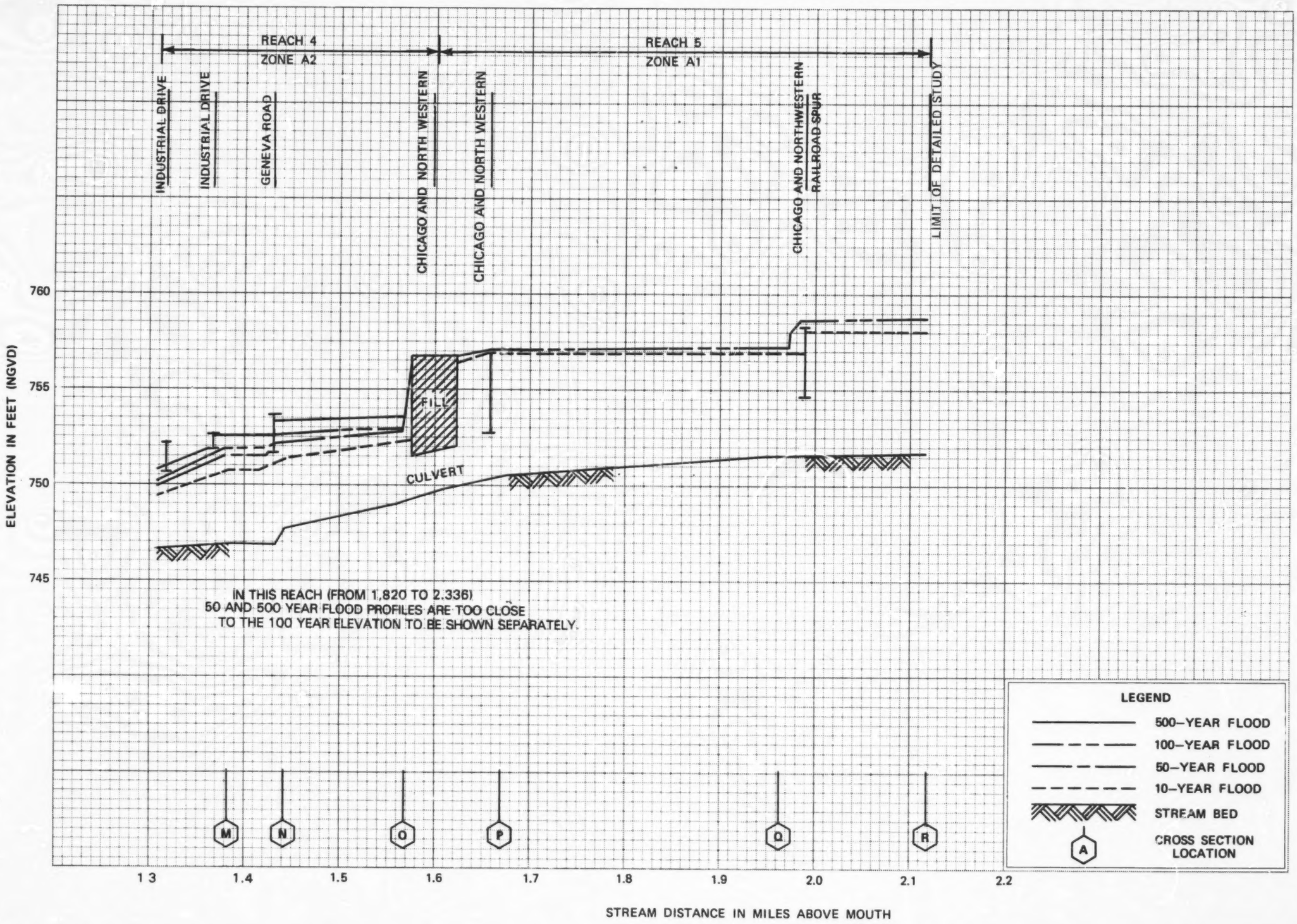

FLOOD PROFILES

UNAMED TRIBUTARY OF KRESS CREEK

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REVISED, 4/15/86

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